Dec. 8, 1936. E. G. E. MEYER ET AL 2,063,180

PRODUCTION OF ARTIFICIAL FILAMENTS AND PARTICULARLY SUCH AS ARE ADAPTED FOR USE FOR TEXTILE PURPOSES

Filed Aug. 10, 1935

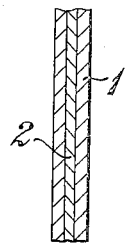

Fig. 1.



Fig. 2.

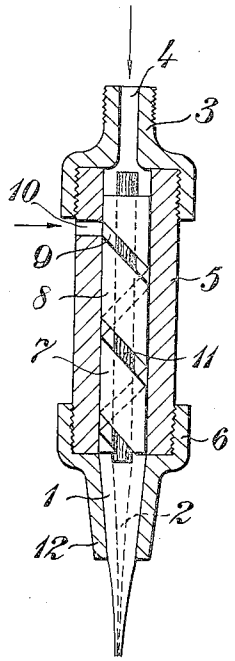

Fig. 3.

E. G. E. Meyer
E. C. Burgoyne
Inventors

By: Glascock Downing & Seebold
Attys.

Patented Dec. 8, 1936 2,063,180

UNITED STATES PATENT OFFICE

2,063,180

PRODUCTION OF ARTIFICIAL FILAMENTS AND PARTICULARLY SUCH AS ARE ADAPTED FOR USE FOR TEXTILE PURPOSES

Ernst Gustav Edwin Meyer and Ernest Clement Burgoyne, Hounslow, England

Application August 10, 1935, Serial No. 35,646
In Great Britain August 11, 1934

3 Claims. (Cl. 18—8)

This invention relates to the production of artificial filaments and particularly such as are adapted for use for textile purposes, for instance so-called artificial silk and artificial hair and filaments adapted to be used in substitution for straws and grasses, the main object of the invention being to produce filaments exhibiting desirable colour effects.

The invention consists in a process of forming artificial filaments which comprises extruding a stream of composition of a character adapted to yield an artificial filament, and at the same time extruding within and coaxially with the said stream a stream of a colouring composition in a volatile solvent adapted merely to impart colour to the filament without materially increasing the substance thereof.

In some cases, the compositions forming the inner coatings may contain liquids in which the materials forming the outer layer or layers of the filament are insoluble and which may therefore function to precipitate such materials as they diffuse into the composition from which the outer layer or layers are formed.

The invention extends to apparatus for carrying out the process.

Such apparatus may, for instance, comprise one or more jets or passages through which the composition, for instance, cellulose acetate or nitrocellulose is extruded and within the said jet or jets and opening at a convenient distance from the extremity thereof a further jet through which the composition forming the core or inner portion of the fibre is extruded.

Optionally, in accordance with the invention, the jets may be so arranged that the material forming the core or inner portion of the fibre is delivered into a body of the composition adapted to form the coating or outer layer or layers of the filament in such manner that both the core and the body of composition adapted to form the coating or outer layer or layers are simultaneously drawn down or are reduced to a desired fineness on or subsequent to their discharge from the jet.

The invention will be described in further detail with reference to the accompanying drawing in which:—

Figure 1 is a view in section of a filament in accordance with the invention, and

Figure 2 is a corresponding cross section,

Figure 3 being a sectional elevation, illustrating by way of example, one form of jet employed in apparatus in accordance with the invention.

Referring to Figures 1 and 2, **1** is the outer layer, lamination or coating of the fibre which may consist of any cellulosic material such as constitutes artificial silk and be, for instance, cellulose acetate, cellulose obtained by denitrating nitrocellulose, viscose or cuprammonium cellulose.

2 is an inner core which may be of a composition of any suitable character containing a dye or colouring matter.

Referring to Figure 3, **3** is a tubulure adapted to be connected to a source of supply of a composition adapted to provide the inner layer or core, which composition may be one containing a dye or colouring matter in solution or suspension and will travel through the passage **4**. To the tubulure is connected one end of a short length of tubing **5**, the other end being furnished with a jet **6**. Within the length of tubing there is arranged in the construction illustrated two helical members **7** and **8** leaving between them a gap **9** for the passage of the cellulosic composition which will enter by way of the passage **10**. Within the helical members there is arranged a wick **11** adapted to lead forward the composition introduced by way of the passage **4**. The composition in question will travel generally in a straight path and will form the inner portion or core of the filament as indicated by the reference **2**, while the cellulosic composition will at first travel in a helical path as above stated and thereafter issue through the terminal portion or nozzle **12** of the jet, the composite body of material thus issuing being drawn out in the manner known in the art or otherwise to form a filament of the desired degree of fineness.

As in forming filaments in accordance with the invention two streams of composition are brought together, one of which compositions may have little, if any, mechanical strength, it may be found convenient to cause the composite body of material to issue from the jet as a stream of greater diameter than is usual in spinning artificial silk and the stream will in such case of necessity have to be subjected to a drawing operation adapted to secure a reduction in its cross-sectional area greater in degree than is usual in order to obtain filaments of the normal degree of fineness.

The attenuation of the stream or filament may be effected wholly or in part also by the provision of dies, through which the stream or filament is drawn in the process of manufacture or by the construction of the extremity of the jet so that the jet itself constitutes a die of progressively diminishing cross section towards its outlet.

At this point, it may be mentioned that what is referred to herein as a core or inner layer is of

extreme thinness or attenuation and constitutes therefore but a minute fraction of the total cross sectional area of the filament.

In conclusion it is to be understood that the above particulars are furnished for the purpose of explaining the nature of the invention and that various changes may be made in the compositions employed and in the method of bringing the compositions together without exceeding the scope of the present application.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. A process of forming artificial filaments which comprises extruding a stream of composition of a character adapted to yield an artificial filament, and at the same time extruding within and coaxially with the said stream a stream of a colouring composition in a volatile solvent adapted merely to impart colour to the filament without materially increasing the substance thereof.

2. A process of forming artificial filaments which comprises causing a stream of composition of a character adapted to yield an artificial filament to pass in a helical path around a wick, causing at the same time a stream of a colouring composition in a volatile solvent which is adapted merely to impart colour to the filament without materially increasing the substance thereof to pass through the wick, and causing the composite stream so obtained from the wick to be extruded through a jet.

3. Apparatus for forming artificial filaments comprising an outer casing, an inlet for the introduction thereto of a composition of a character adapted to form artificial filaments, an inlet for the introduction thereto of a colouring composition in a volatile solvent adapted merely to impart colour to the filament without materially increasing the substance thereof, a jet on the casing through which a composite stream of the two compositions is adapted to be extruded, a wick communicating with the second mentioned inlet and the jet through which the second mentioned composition is adapted to pass on its way to the jet, and a helical path extending around the said wick and communicating with the first mentioned inlet through which the first mentioned composition is adapted to pass on its way to the jet.

ERNST GUSTAV EDWIN MEYER.
ERNEST CLEMENT BURGOYNE.